

## RETURN-FLOW WATER FROM IRRIGATION DEVELOPMENTS.<sup>1</sup>

By R. I. MEEKER, Irrigation Engineer, Denver, Colo.

The importance of Mr. Meeker's study of the disposal of irrigation water will be quickly recognized by all interests concerned in the development of irrigated areas. We reproduce Mr. Meeker's summary only as given in his own words:

*Summary.*—The following paragraphs summarize the conclusions of this study:

- (1) Ordinarily 50 per cent of the water diverted for irrigation purposes becomes a source of return flow.
- (2) Annual return flows of from 35 to 65 per cent of the river flow diverted have been measured for large compact irrigated areas.
- (3) In the South Platte and tributary valleys in Colorado, where 1,100,000 acres are irrigated, return flow amounts to 1,000,000 acre-feet annually.
- (4) In the Cache la Poudre Valley where irrigation is intensive and 250,000 acres are irrigated, the annual return flow is 130,000 acre-feet or about 0.50 acre-feet per acre.
- (5) In the North Platte Valley, Nebr., where water is plentiful, the annual returns from 250,000 acres are 1.6 acre-feet per acre.
- (6) Annual drainage returns on the two Colorado projects of 5,000 and 30,000 acres, respectively, fall close to 1 acre-foot per acre.

<sup>1</sup> *Engineering News Record*, July 20, 1922.

(7) Monthly returns throughout the year are not constant. The summer and fall months are the months of maximum return and the minimum returns occur in the winter and spring months.

(8) From 50 to 60 per cent of return flow under natural or artificial drainage occurs during the irrigation season and is available for re-use.

(9) Return-flow waters from irrigation in the older irrigated valleys are a large factor in water supply and have a large economic value.

## THE RELATION BETWEEN HAZE AND RELATIVE HUMIDITY OF THE SURFACE AIR.

By J. WADSWORTH, M. A.

[Abstract from *Professional Notes No. 26*, British Meteorological Office, 1921.]

Mr. Wadsworth has made investigations of the records at various stations in England to discover if there is any relation between the occurrence of haze and the humidity of the air. At Eskdalemuir, Valencia, and Kew he found that there was a rapid decrease in the frequency of mist and an increase in the frequency of haze as the humidity decreased. The records at Aberdeen showed that both haze and mist tended to disappear in dry air. He accounts for the contradiction by probable confusion of the terms haze and mist or the presence of other causes.—R. T. E.

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Brooks, C. F., & Donnelly, E. C. A scale of weather values with graph showing daily sequence of the weather. p. 63. Abstract. [April.]

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## SOLAR OBSERVATIONS.

### SOLAR AND SKY RADIATION MEASUREMENTS DURING JUNE, 1922.

By HERBERT H. KIMBALL, in Charge, Solar Radiation Investigations.

For a description of instruments and exposures, and an account of the method of obtaining and reducing the measurements, the reader is referred to this REVIEW for April, 1920, 48 : 225.

From Table 1 it is seen that direct solar radiation intensities averaged slightly below the normal for June at all three stations.

Table 2 shows that the total solar and sky radiation received on a horizontal surface averaged below the June normal at Washington. At Madison it averaged above the normal during the first half of the month and below during the second half.

Skylight-polarization measurements made on two days at Washington give a mean of 44 per cent with a maximum of 51 per cent on the 12th. These are slightly below the respective averages for June. At Madison, measurements made on nine days give a mean of 53 per cent with a maximum of 71 per cent on the 3d. The